February 2, 2001

Honorable Mayor and City Council:

On Monday February 5th the Regional Technology Alliance will announce their findings from a study on the digital divide in San Diego, funded by the California Technology Trade and Commerce Agency, the Waitt Family Foundation and the San Diego Workforce Partnership.

The digital divide is an issue affecting four of the Mayor's goals: reducing traffic congestion, creating neighborhoods we can be proud of, building a strong library system, and making San Diego America's safest city. The digital divide also has implications for our workforce readiness, educational system, and quality of life, thus affecting our technology industry and our ability to attract and incubate growth and investment.

The enclosed document is a working draft, however we thought you would want to review it prior to the RTA announcement.

The Commission had five goals in preparing this report:

I. Define the issue
II. Identify implications for San Diego
III. Identify what role the City could play
IV. Identify local assets and resources
V. Identify other cities that could serve as models

We included a case study from Boston and also collected information from Seattle, Chicago, Atlanta, and Silicon Valley. Last night, San Jose Mayor Ron Gonzales outlined his vision for a "Digital Divide Blueprint" that will be implemented over the course of the next year. As Mayor Gonzales noted, "There is no silver bullet. We need commitment from all parts of our community." Mayor Gonzales serves as Board Co-Chairman of Joint Venture Silicon Valley, which is profiled in our report.

We hope that you find it useful and we welcome your comments. We look forward to working with the Mayor, Council, City staff and members of the African-American and Latino Advisory Boards to further develop our recommendations and establish an action plan to close San Diego's digital divide, ensuring that all of our citizens are connected to their government, to their communities, and to each other.

Sincerely,

(signed)

Carrie Stone, Chair
Digital Divide Working Group
City of San Diego
Science and Technology Commission

(signed)

Vicki L. Marion, Chair
City of San Diego
Science & Technology Commission

Attachment: 1. Digital Divide Working Draft

Science & Technology Commission
202 C Street, MS 9B•San Diego, CA 92101-3869
Tel (619) 533-6565 Fax (619) 236-6067

THE DIGITAL DIVIDE IN SAN DIEGO

Implications and Recommendations

Working Draft

City of San Diego

Science and Technology Commission

February 22, 2001

EXECUTIVE SUMMARY

The City of San Diego Science and Technology Commission was formed to advise the Mayor and Council on policy and issues which impact both the technology industry and our research and scientific institutions, in order to help ensure that our region will continue to attract and incubate growth and investment. The digital divide is such an issue. Furthermore, it affects four of the Mayor's ten goals:

Reducing traffic congestion

Effective telecommuting requires easy access to a computer and Internet connection, but San Diego's Hispanics and African-Americans continue to lag behind their White and Asian counterparts in home computer ownership. Regionally, households in the central and southern areas are less likely to have a home computer, reducing the ability to be a potential resource for the technology industry in the north.

Creating neighborhoods we can be proud of

One solution to the digital divide is to create open, welcoming neighborhood-based community technology centers. Such centers can fill many functions including job training and small business incubation. They can provide evening and weekend access to City services, extending the reach of Community Service Centers and libraries. They can create and maintain neighborhood-oriented online content. Complementing their efforts are the other types of nonprofit organizations that work with the City: community development corporations, social service agencies, and community clinics. Closing their "organizational divide" will help revitalize inner-city neighborhoods.

Building a strong library system

In Charlotte North Carolina, a main downtown library anchors twenty-three branches that serve as community centers. The main library focuses on:

I. Job seekers looking for information about entrepreneurship, small business and new software programs.
II. New residents, helping them to establish personal and professional support networks.
III. Low-income and underserved people who participate in a program to earn refurbished computers.
Iç. An International Business Library, both electronic and print, created and sustained by the Chamber of Commerce and local businesses.

San Diego's libraries are both the front line and the safety net in closing the digital divide, and intriguing programs such as Charlotte should be considered in a library financing plan.

Making San Diego America's safest city

Youth programs are based on the premise that when teens and young adults have a safe place to go and meaningful activities, the entire community benefits. Such programs can be integrated with other efforts to close the digital divide, and employed as a strategic crime-fighting tool.

San Diego is rich in technology assets, and overall our glass is more full than empty. But the digital divide remains a significant barrier for a large portion of our population. The Mayor and Council can play a key leadership role by leveraging assets and demonstrating support.

I. DEFINING THE PROBLEM

Michael Schrage of MIT, quoted in the New York Times, said, "When the same word means different things to different people, you're going to spend more time managing meaning than managing the problem." His observation applies to the phrase, "digital divide."

References to the term began appearing around 1994. In 1996, Amy Harmon at the Los Angeles Times used it to describe growing alienation between a husband who was very involved in technology and a wife who was not. Others considered it to be the gap in the quality and quantity of information available to students, or the gap between employer needs and the skills of the available adult workforce. The term became ubiquitous in 1999 with the release of Falling Through The Net: Defining the Digital Divide, the landmark study from the U.S. Department of Commerce National Telecommunications and Information Administration (NTIA) which framed the issue around what could be measured on a national scale — the number of homes owning a computer with Internet access. The implication was that the digital divide would be closed when home computer ownership reached universal service levels equal to or better than telephone penetration, which has stabilized at 94%.

This approach sparked a debate between those who were defining the problem differently, and thus advocating for different solutions. Using NTIA's definition, many believed the problem would be solved by the market through cheaper computers and web-enabled cell phones. If seen as a larger social, cultural or educational problem — what Larry Rosenstock of High Tech High called, "the economic divide gone digital" — the solutions were far more complex.

Additionally, community leaders and policymakers questioned whether the mere presence of a home computer meant that the goal had been reached. If Americans had computers and Internet access, did they have the skills to use them? Were those skills linked to the needs of employers? Was this tool being used to build stronger citizens, communities, and economies? What was necessary for that to happen? And, would the marketplace move quickly enough to solve these issues, or would a generation be left behind in the process?

Throughout 1999 and 2000, the "home computer ownership divide" continued to close, while awareness of the "organizational divides" grew. Research revealed digital divides affecting schools, small businesses and nonprofit organizations — not just whether computers and Internet access were present, but whether they were being used effectively. Disturbing trends showed school computers used for drill-and-practice in low-income neighborhoods and creative exploration in higher-income neighborhoods. Across all sectors, a new divide appeared when connectivity speeds affected what content could be viewed. Access no longer guaranteed equality.

The role of public access centers also changed over time. In 1994, NTIA's report considered public schools, libraries and community technology centers to be an "interim safety net." Their significance grew as communities and policymakers realized that they function as first point of contact and ongoing source of support — from introductory training to lifelong learning; from business incubators to technical support providers. For Blacks and Hispanics, they remained the main source of access even in 2000. However, most would agree that we should not have to choose one over the other — public access is essential but true empowerment comes with personal or home computer ownership. The two should complement each other.

Beginning in 1999, media attention prompted an inevitable backlash against the phrase "digital divide." Critics on one side claimed the entire issue was overblown. Critics on the other side felt the issue was real but the term was negative, simplistic and patronizing. Steve Cisler, writing in the San Jose Mercury News, called it, "as demeaning as one from a past era, 'They live on the wrong side of the tracks.'" He quoted Amy Borgstrom, director of the Appalachian Center for Economic Networks who said, "most of the people I know who would be considered on the other side of this divide would resent some person of privilege describing them so." Practitioners of community technology — a blend of community and economic development, education and technology — argued that just as public libraries serve more than the poor, a focus on the digital divide "limits the ability to reach out to the community as a whole."

The issue became redefined as one of "digital opportunity" or "digital dividends," and NTIA's 2000 report was titled, Falling Through the Net: Toward Digital Inclusion. The pros and cons of these variations are summed up by Kenan Jarboe of the Athena Alliance and Larry Irving, former Assistant Secretary for Communications and Information in the U.S. Department of Commerce.

> From: Kenan Jarboe [mailto:kpjarboe@athenaalliance.org]
>
> I no longer use the term "digital divide" -- not that I believe that it is false or incorrect; the problem is real -- but that it is too limiting. Our goal is not simply to close a divide (i.e. make sure that everyone has the same stuff) but to make sure that everyone benefits from and participates in the new information age -- socially, politically and economically. My catch phrase has always been "inclusion."
>
> From: Larry Irving <lirving@irvinfo.com>
>
> I have watched the efforts of industry (and, alas, after my departure from NTIA, even many in the Clinton Administration) to move away from the term Digital Divide to something meaningless or innocuous (or at least, to their minds, not negative) such as Digital Opportunity. Aside from the lack of emotional, visceral or alliterative appeal of those terms, they consistently fail in the marketplace. The rest of the world, including the press in the rest of the world, has picked up on the term "digital divide."

Larry Irving could have also made the point that the "digital divide" serves to remind us that a gap still exists — even in the simplest definition of the problem and even in technology-rich San Diego. However our glass is more full than empty, and our picture is one of opportunity. *It is within our reach to become a model for the nation, an all-wired city where every adult and child has the tools and ability to actively participate in the information age.*

II. IMPLICATIONS FOR SAN DIEGO

The City of San Diego Science and Technology Commission believes that science and technology will be the primary drivers of economic development and prosperity in our region. Our vision is that the digital divide can be considered closed when all San Diego citizens are able to use technology — particularly digital resources — for both economic opportunity and quality of life, including education, work, government, interfaces, culture and entertainment.

To achieve this goal, we must first understand where to start. Studies have consistently shown that the digital divide is a problem that disproportionately affects Hispanics and African-Americans. A 1999 Field Institute poll found California's Hispanics had the least amount of access to computers at work, the least education of any race or ethnicity, and the lowest household incomes. Hispanics comprise 26.5% of the region's population, a 44.4% increase over the last decade, and African-Americans close to 6%. San Diego cannot afford to allow a third of its population to be left behind. It literally cannot afford it — Joint Venture Silicon Valley estimates that the gap between the needs of local employers and the supply of local skilled labor amounts to approximately $3-4 billion in incremental hiring and lost opportunity costs. A researcher at Walden University found that replacing a Silicon Valley engineer costs $500,000 per person. If San Diego does not have a suitable workforce, it too will face these costs and more.

And we must go beyond the examples of engineers and scientists. During the mayoral campaign, one candidate expressed the belief that "not all occupations require computer literacy -- we also need trades... car mechanics, roofers... computers don't have anything to do with (those jobs)." His perspective ignores the reality that most if not all jobs are being transformed, directly or indirectly, and that the benefits of science and technology affect our quality of life. It ignores the young mother married to a Navy seaman, working as a hotel maid, earning an associate's degree online that enables her to move up to supervisor. She can communicate with her family overseas and build her skills from her home while being with her children. The nonprofit that developed her affordable housing cut months off construction time using improved technology, so she lives closer to work and has a shorter commute. The neighborhood community clinic supplies online healthcare advice and meal preparation information in her language, so her children receive better nutrition and have fewer sick days. Even if she never uses a computer in her job, her quality of life has improved. San Diego cannot afford to write off portions of its population just because they may not have the opportunity to experience science and technology in the classroom or the laboratory.

To measure progress towards our vision, the Commission proposes the following five benchmarks.

1. Home Computer Ownership

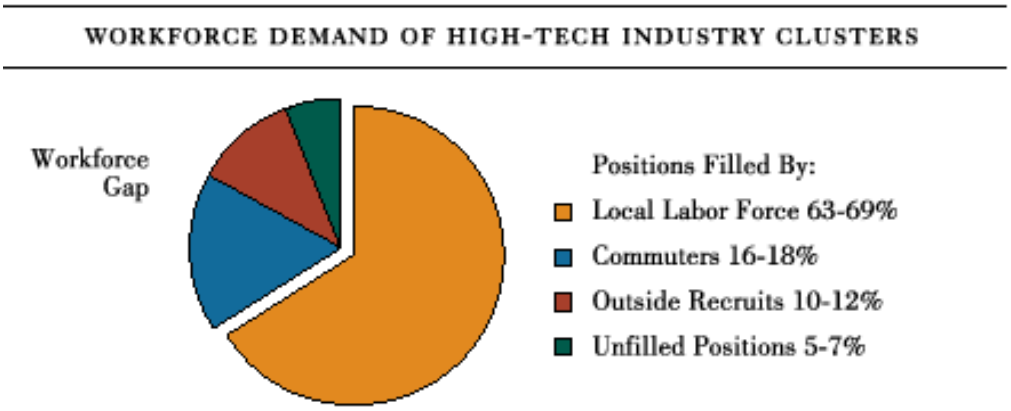
Despite critics, household computer penetration remains a valid indicator of technology integration. On February 5 2001, the San Diego Regional Technology Alliance and Waitt Family Foundation will release a comprehensive profile of the digital divide in San Diego, bringing the NTIA framework to a local level and pinpointing the areas of greatest need. This study, along with research conducted by the City, will enable community leaders to target efforts in order to achieve 90% computer penetration. Why not 100%? The Science and Technology Commission recognizes that there are households that consider themselves "disconnected by choice" — they had Internet access and discontinued it, or simply don't want it regardless of cost.

2. Presence of Accessible Community Technology Centers

The San Diego Community Technology Group, YMCA Childcare Resource Service and Waitt Family Foundation are compiling a database and map of public access sites throughout the County. Once completed, this map can be compared to income data, the RTA/Waitt research and the City's research to determine which neighborhoods need more support. Similar maps have been produced by the cities of Seattle and Atlanta, and by Joint Venture Silicon Valley.

3. Workforce Readiness

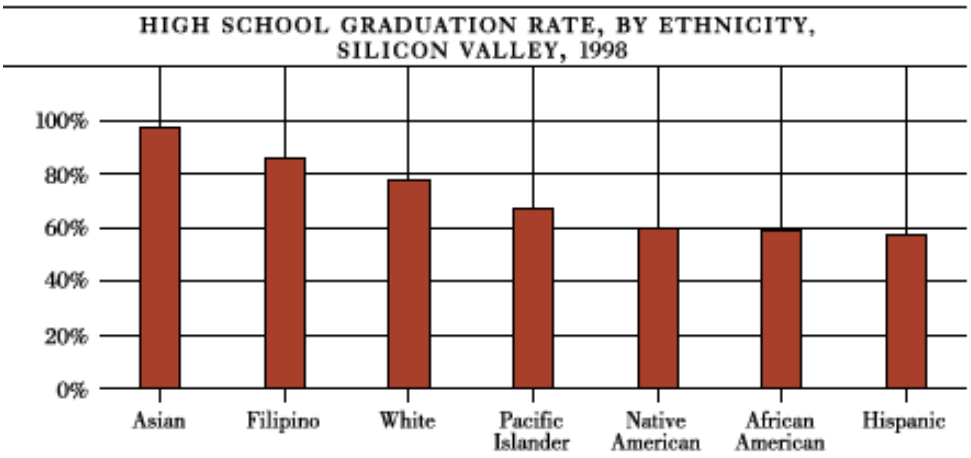
With funding from local government, industry, and other partners, Joint Venture Silicon Valley identified a workforce gap of 31 to 37% and the associated costs. The Science and Technology Commission proposes developing a similar benchmark for San Diego.



Sources: A.T. Kearney Workforce Initiative Survey, Santa Clara Valley Transportation Authority, Association of Bay Area Governments, Employment Development Department

4. Educational Readiness

Joint Venture Silicon Valley also identified critical education statistics showing the percentage and ethnic breakdown of students who graduate from high school; enroll in science, technology and math courses; meet the UC/CSU entrance requirements; and earn engineering degrees from local universities. The City of Seattle developed indicators measuring technology literacy and fluency as well as basic education. The Science and Technology Commission proposes to obtain similar research and develop similar indicators for San Diego.



Sources: Alameda, Santa Clara and San Mateo County Offices of Education

5. Economic Health and Quality of Life

Working with the Economic Development Corporation, SANDAG, San Diego Regional Technology Alliance, Workforce Partnership, United Way, the Center on Policy Initiatives, San Diego Dialogue, local foundations and other community-based organizations, the Science and Technology Commission proposes to extend the standard economic metrics already assembled — job growth, average wage, exports, and so forth — to include civic engagement, livability, community strength, and opportunities to participate in locally-created online content.

The previous administration allocated funds to the Science and Technology Commission which will be used to assemble and develop these indicators. In addition, the City's Economic Development and Community Services Agency has volunteered support staff. The results will be valuable information that the City can use to measure the effectiveness of its current programs and measure progress towards the future.

III. WHAT THE CITY OF SAN DIEGO CAN DO

Around the country, local governments are initiating, managing, facilitating or contributing to digital divide initiatives. Aki Namioka, a software engineering manager quoted in the Seattle Post-Intelligencer , said, "Seattle views closing the digital divide as a civic obligation….There is a lot of community technology activism here. There's a lot of people in the high-tech industry who want to help their community." Other leading cities include Boston, Chicago, Atlanta, Cleveland, Raleigh-Durham, and New York. The best of these examples took a holistic view, involving citizens and organizations across all sectors. They backed their leadership with financial support, committing funds from cable and wireless franchise fees and property taxes. They partnered with education, business and nonprofit organizations to secure federal, state and private funding. They are doing more than a quick photo-op, instead sustaining commitments over multi-year periods.

In San Diego, activity has largely focused on the 6-to-6 program which is advantageous for students but does not meet the needs of the rest of the community, and on the Community Service Centers and library system which benefit the community but have limitations — among City residents who don't have access to a computer at home, only 17.3% take advantage of library resources. The City offers interest-free loans for employees to purchase computers; has supported a few community technology centers through Community Development Block Grant funds; and recently partnered with the Technology Training Foundation of America on the city's first Computer and Electronics Recycling Day.

This is an excellent start and staff should be commended for their efforts. However we believe the City of San Diego can do more.

We urge the Mayor and Council to:

1) Designate income from cable franchise renewals or wireless licensing contracts to create a community technology matching fund open to nonprofit organizations and neighborhood groups. Similar matching funds have been established in Seattle, Atlanta, Cleveland and other cities, with amounts ranging from $250,000 per year to multi-million dollar funds. In San Diego, applications could be asked to link their project with at least one of the Mayor's goals, thus encouraging synergy and engaging citizens as joint problem-solvers.

2) Designate or help secure funds targeted for Hispanic and African-American communities in the areas of lowest household computer ownership.

3) Demonstrate a greater leadership role establishing San Diego as a progressive city where *all* citizens are able to use technology — particularly digital resources — for both economic opportunity and quality of life. The attached case study from Boston Massachusetts shows how high-profile efforts can leverage significant private and federal investment, resulting in real economic and educational benefits.

IV. LOCAL RESOURCES

The City will find many partners willing to share the load. The following is an overview of some of the major initiatives underway in San Diego County.

Community Technology Centers (CTCs) are computer labs located in nonprofit organizations, libraries, churches, multi-family housing units and other community sites including the San Diego Housing Commission, the Workforce Partnership, and the Regional Technology Alliance. There are at least eighty CTCs in San Diego County along with hundreds of school-based computer labs. A relatively small percentage are open to the public. Many restrict usage to residents of a housing unit, for example, or by a specific criteria (job-seekers, continuing education students). In a survey conducted by the UCSD Civic Collaborative and the San Diego Community Technology Group, the three highest priorities for San Diego's CTCs are (1) sustainable funding; (2) computers; and (3) volunteers. Other commonly-mentioned challenges include hardware/software maintenance, community outreach and promotion, and coordinating efforts with schools and businesses to ensure that they are teaching up-to-date skills. Waitt Family Foundation, now headquartered in San Diego, is launching several new community technology centers through its PowerUP program. The national association of community technology centers, CTCNet, will hold its all-affiliates conference here June 15-17 2001, bringing hundreds of policymakers, corporate representatives, foundations and community advocates to San Diego.

Cisco Networking Academies are certification programs established by Cisco Systems to teach students network installation and repair. There are at least eighteen academies in the San Diego region, with more expected to open in 2001.

Bay Vista Computer Learning Center
Chula Vista High School
Coronado High School
Cuyamaca College
CWA Local 9509 Minilab
Educational Cultural Complex
High Tech High
Imperial Beach Adult Center
Mira Costa Community College
National City Adult Education Center
Point Loma Nazarene University
San Diego Juvenile Court & Community School
San Dieguito High School Academy
SDCCD -North City Center
SDCCD - Centre City Skills Center
SER-Jobs for Progress, Inc
Southwest High School
Southwestern Cisco Local Academy
Southwestern College CATC
Vista High School ROP

Digital Bridge is a program of San Diego State University and the San Diego Communications Council, funded by Cox, Pacific Bell, Qualcomm and Gateway. The project has three phases:

- Create a "smart classroom" at Hoover High School with 40 PCs and video projection. The lab, which held its grand opening in October 2000, will be made available to the community after school hours.
- Expand the smart classroom concept to a second building and install 120 PCs in 3 classrooms, also available to the community after hours. Construction and installation will be funded by a Digital High School grant from the state.

- Renovate the former Lloyds Furniture Building on El Cajon Boulevard. 5000 square feet will be dedicated to a computer lab to be completed in the summer of 2001. In addition, the building will house the City Heights Community Development Corporation and start-up businesses.

The Global Schoolhouse, an internationally-acclaimed project, is based in Oceanside. This program began at Jefferson Junior High when a teacher used Cornell University's free Internet videoconferencing program, "CU-See Me," to connect her low-income students to researchers around the world, to make the students aware of alternatives beyond street gangs and dead-end jobs. Now owned by Lightspan.com, Global Schoolhouse continues to develop new methods of geographic exploration and collaborative learning.

LemonLink is a nationally-recognized project in Lemon Grove, funded by Microsoft, Compaq, Cox Communications, Cisco, Citrix, Bell and Howell, Computer Curriculum Corporation, Communications Systems Group and Wyse Technology. LemonLink uses microwave and fiber to connect classrooms, homes, City Hall, the Fire Department, Public Works, the Recreation Department, the Community Center, Teen Center and the Senior Center. The school district functions as an applications service provider, enabling the entire community to access school resources at any location.

Making Connections and InfoTAP are two programs addressing the "organizational divide," providing technical support and training for nonprofits. Making Connections is run by the Local Initiatives Support Corporation (LISC) and targets community development corporations while InfoTAP is a program of the New Beginnings Council (City of San Diego, County of San Diego, United Way, San Diego Community College District and other partners) and targets children, youth and family organizations.

San Diego Community Technology Group is an informal volunteer clearinghouse of digital divide efforts. The Technology Group meets quarterly, bringing together businesses, government, nonprofit organizations and educational institutions to learn from each other. It has a mailing list of 300 people and an active listserve of 95, and initiated production of a regional map of community technology centers.

San Diego County Office of Education operates a mobile computer lab to provide onsite training, a computer lab for teachers to try out software before purchasing, and is co-hosting a Computer Clinic with the San Diego Computer Society. Other organizations with mobile labs include Jewish Family Service, Nonprofit Management Solutions, and the Community College Foundation.

San Diego Foundation is launching new grantmaking initiatives in the areas of science and technology, and the Spring 2001 Community Grants are intended to encourage math, science and technology literacy in diverse communities.

Sweetwater Union High School District received a California State Technology Literacy Challenge Grant for "Log on to Literacy." This program, the first of its kind in San Diego, provides 7th and 8th

grade students with a computer and Internet access at no cost. Students are required to take care of the computer and complete all of their assignments, and parents must attend four hours of training and meetings. Participating schools are National City Middle School, Granger Junior High and St. Charles School. During the next two years, four more sets of laptops will be purchased reaching all 7th and 8th graders at all three schools.

Technology Training Foundation of America, Coleman College, and the San Diego Futures Foundation are examples of computer recycling and distribution programs. The Futures Foundation is the largest. Formed by the County's outsourced IT contract with the Pennant Alliance, SDFF will serve as a conduit for 3,000-5,000 computers a year that are being replaced by the County. In addition, SDFF is establishing at least five "Technology Outreach Centers" (TOCs), one in each supervisors' district. According to Becky Stawiski, SDFF Executive Director, "TOCs are the Foundation's model for technology infusion into the community. They will assist in the refurbishment, distribution, and installation of computers, and other technology related services." TOCs are or will be located at educational facilities to take advantage of service learning opportunities and collaborative relationships with local schools, adult education, and vocational centers. SDFF is also developing a "CountyNet" website, mentor-protégé small business programs, teacher workshops in conjunction with Pacific Bell, and a teacher intern program.

There are several programs focusing on the needs of people with disabilities and the nonprofits that serve them. UCP, the Veterans Administration and the Access Center operate community technology centers specializing in assistive technology and services for people with disabilities. Adaptive Computer Empowerment Services is an all-volunteer organization that refurbishes and distributes computers to people with disabilities. Pangea Foundation received grants from the US Department of Commerce and Community Technology Foundation to produce online information on community services, medical assistance, assistive technologies, scholarships, and other local resources.

UCSD Civic Collaborative is conducting a qualitative study to complement the quantitative study from the Regional Technology Alliance. According to UCSD researcher Laura Stanley, it will "go beyond understanding the digital divide in terms of material access and identify psychosocial barriers that perpetuate the divide… Additionally, we seek to understand how new users — especially, the traditionally technologically disadvantaged and underserved — have overcome their particular set of obstacles and how they relate to and identify with the techno-future." Study should be completed in April 2001. UCSD is also home to "The Fifth Dimension/La Clase Magica," designed by the Laboratory of Comparative Human Cognition. This program places child development undergraduates at community sites where they earn course credit while staffing nonprofit technology centers.

V. CASE STUDY: BOSTON, MA

Boston's transformation began with the schools and grew outward, led by the Mayor and with the support of the entire community. According to Howard Leibowitz, Director of Intergovernmental Relations, the city is now fourth in the country in accessing federal e-rate monies. Since 1996, it has invested $50 million into digital divide equipment and programs, with an additional $30 million coming from private individuals and foundations. They are the first major urban city to have their schools fully wired and are now wiring libraries and community technology centers. In conjunction with the Massachusetts Software Council they operate a Summer Jobs Program that reaches 11,000 kids, placing them in local companies large and small. They provide a range of support to neighborhood groups including assistance in applying for technology-related grant proposals, and a 501(c) (3) grantmaking nonprofit, Boston Digital Bridge Foundation. Dedicated City staff include one full-time Digital Divide Adviser to the Mayor and one full-time fundraising person at the Redevelopment Authority. The Department of Public Schools has a Technology Office with 5-10 full-time people working on curriculum development and integration; and there are several staff in the community centers programs.

Boston was profiled in Converge Magazine, December 2000.
http://www.convergemag.com/Publications/CNVGDec00/buildingDigital.shtm

BUILDING THE DIGITAL BRIDGE IN BOSTON

Editor's Note: *Our November 1998 issue featured Boston Mayor Thomas Menino's (right) proactive leadership role in mobilizing a team of committed individuals to connect the city's public schools to inspiration and opportunities brought on by technology. In the process, it was people -- students, teachers, community members -- who connected with each other. Today, with the city's Digital Bridge partnership in place, Boston schools are a shining example of collaboration and partnerships done with success. The Boston story is worth revisiting. Here we further examine the city's progress and plans for the future, and some of the people making a difference.*

EDUCATION IS A POLITICAL FOOTBALL. IT GETS TOSSED around, kicked around and talked about a lot. But you don't often find someone who actually risks getting blind-sided, picks up the ball and runs for a touchdown. Boston Mayor Tom Menino is that rare exception. He wasn't content to sit on the sidelines and criticize. He got involved. And he is making a difference. A huge difference.

Long before any other urban mayor, Menino recognized that technology was a new and critical component of an effective education reform strategy. The technology initiatives that he and his team have put in place are as remarkable for their vision and daring as for their impressive results. High-school students are going into good paying jobs right out of school -- many of them holding professional certifications earned while still in school. Growing numbers of students are signing up for after-school classes that are honing their technical and technological skills. Parents and teachers are discovering how to use the Internet to communicate about school-related activities. Businesses are enjoying access to a motivated and well-trained pool of homegrown talent.

Mayor Thomas Menino : Commitment Makes All the Difference

"Every kid is important," Mayor Thomas Menino said emphatically. And something about his tone of voice, his matter-of-fact way of saying it, lets you know that this is not political rhetoric. He means it. A proud grandfather of four, Menino has a personal stake in Boston's educational future. He takes it very seriously.

"Education is the hub of all success," Menino said. "Good jobs, a good life, good housing -- education is at the center of it all. And without education, good things in life fall by the side."

Menino credits a large part of Boston's success in building a digital bridge to the city's diversity. "Diversity is our strength," he said. "It teaches people to value differences and to get along with one another. We need to capture that energy, put the brainpower in our city to work." He points with justifiable pride to the growing numbers of technology centers in Boston that are helping to bring children, adults, seniors and entire families into the Digital Age.

When he set high and specific goals for achievements in technology, the mayor surprised many. His response: "You've got to have goals. Without them, you just stumble along." The city is well on track to meet its goal of one computer for every four students, computers for all teachers, and interconnection of schools and library resources.

"People ask me what I want to be remembered for," Menino said. "It's not the building development. It's human development. Providing an educational system that can take kids and families to their potential. That's what it's all about."

What makes these achievements more remarkable still is that Menino boldly and publicly called his play. He didn't just work quietly behind the scenes and then take credit for things when they worked out. He started by announcing to all who would listen that Boston had a problem. He quantified the problem, against the advice of his advisers and promised an ambitious fix. Too ambitious, many thought. In less time than it takes to say "wired for the Internet," Menino and his hard-working team had sketched out a game plan, raised a staggering amount of non-tax dollars and put together a multi-pronged program to meet the challenge of building a bridge for Boston's students and families to cross over into the digital economy.

The entire Boston community -- industry, teachers, parents, students and politicians -- have stepped up to the challenge and given everyone something to cheer about. The diversity of viewpoints and talents that are shaping this effort are all pulling together to help build a technology bridge that will benefit families, individuals, business and the economy as a whole. In fact, it is largely due to the diversity of interests involved that the project is working so well.

A COURAGEOUS BEGINNING

In 1996, Menino delivered his state of the city speech from the Jeremiah Burke High School, a rundown inner-city facility. Menino wanted to make a statement. It would have been easy to take a safer stand on education with a less visionary program, but he was intent on making the point that all was not well. Something was broken and badly in need of fixing.

To the amazement of all, he abandoned the tried-and-true path of feel-good generalities and spelled out in clear, unmistakable terms his vision for a digital bridge. He moved quickly from higher standards to extended days to improved facilities.

"By the year 2001," Menino said, less as a prediction and more as an or else, "there will be computers not just in the labs, but in every classroom. One computer for every four students. A computer for every teacher. Every school library linked to the 6 million books of the Boston Public Library." All Boston schools would be networked to the Internet with high-speed access.

At that time, Boston had a student-to-computer ratio of 63-to-1. An estimated 5 to 10 percent of teachers had computers, but few if any computers were used in the classroom. A couple of schools had dial-up access to the Internet. The facts were grim. With well-to-do suburbs in every direction just minutes away, Boston was virtually the poster city for the Digital Divide. But it was a city ready, willing and able to build a bridge.

JUMP-STARTING THE REVOLUTION

B.Keith Fulton : Making Boston a Model

As executive director for corporate relations for America Online, Keith Fulton helps build programs that promote opportunity in the digital economy. He was formerly director of technology programs and policy for the National Urban League, serving as senior adviser to 115 local affiliates.

"The people at America Online are well aware that the Internet has the power to reduce isolation and inequities in our society," Fulton said. "We have a responsibility to make sure this new medium benefits everyone and that no one gets left behind.

"When we learned about the multiple technology initiatives going on in Boston, we could see that a lot of the right things were coming together to make a difference. It was in line with our efforts to help find ways of scaling up public/private ventures to serve the broader community.

"Boston is doing some innovative things in its emphasis on using local leadership, local strategies and local people to bring technology into the schools and homes. Our hope is that the AOL team can leverage those efforts and add capacity in ways that Boston's Digital Bridge becomes a model for other cities to follow."

CONTACT INFORMATION
www.aol.com
bkfulton@aol.com

Mayors tend to take one of two routes in instituting change of any kind. Some appoint study groups, pass the results along for analysis, iron out the rough spots with focus groups and go back into a new study phase when they inevitably learn that change costs too much. Then there is the Menino way: Just do it.

Menino's team chose to work by leaps and bounds. They enlisted the aid of local and out-of-state businesses, volunteer parents, unions -- anyone who could be moved by self-interest, altruism or plain old-fashioned political arm-twisting. Some held back, believing it couldn't be done. Boston had bitten off more than it could chew.

Then 3Com donated a million dollars worth of equipment. Other companies took notice. The International Brotherhood of Electrical Workers donated time and materials to wire Boston schools for the Internet. By October 1998, Boston had become the first major city in the country to have networks and high-speed Internet access at all its schools. Ahead of the mayor's timetable.

"It was a little like a multi-level chess game," said Steve Gag, technology adviser to the mayor. "We needed a solid plan to prove to businesses and the community that we could do what we said. We needed the support of business to guide the program, give it relevance and keep it grounded in reality. We needed the school community to tell us what they wanted, what they expected -- and to work with us to build the momentum and keep it going."

Today, Boston is showing what can be done when a Digital Bridge is built, allowing an entire community to cross into new jobs, opportunities and visions of the 21st century. Businesses such as 3Com, America Online, Microsoft, Verizon Communications, Arnold Communications, Keane, Target Software, Intel, HiQ and Foley, Hoag and Eliot, have come aboard, providing expertise, support and state-of-the-art equipment. Schools have stepped up to the challenge, students have shown what can be accomplished, and neighborhoods are being brought closer together by technology.

Today Boston has 130 networked schools, a computer-to-student ratio of 1-to-6, 65 percent of its teachers trained in the effective classroom use of technology, 1,500 students enrolled in certified technology classes, 26 networked libraries and 100 networked community centers (40 of these funded and endowed by the Timothy Smith Trust Fund). The original million-dollar gift from 3Com has now been supplemented by more than $20 million from the private sector, $50 million from the city of Boston, and $65 million from the federal e-rate program. Boston's digital bridge is still a work in progress, but the progress is both real and highly relevant to the current and future well-being of the city, the state and the region.

The ability to draw upon the strengths of diversity was part of the solution. The ability to juggle several initiatives at the same time, with positive results fueling other positive results, was also important. But the biggest difference was that Mayor Menino took a stand, rallied people behind his cause and worked around the clock to make it happen.

THE PUZZLE COMES TOGETHER

Echo Tsai, CEO of HiQ Computers: Resonating Impact

HiQ provided the first 1,000 computers that launched Boston's Technology Goes Home initiative. That donation -- and HiQ's offer of free teacher training -- soon motivated other companies to extend their support.

"We think training is the key here," said Tsai. "Like we all know, computers are just machines. Humans make them work."

www.hiq.com

According to Boston's superintendent of public schools, Tom Payzant, "The picture started to come into focus when Ann Grady, director of technology for the schools, recommended we ask the business community to help us draft a plan for wiring Boston's schools." According to the plan, schools that wanted to be considered for connection to the Internet were required to write a proposal that would include a plan for the instructional use of computers. "The response was overwhelmingly positive," said Grady. "Within an eight-week period, 18 schools were wired. That showed what could be done with hard work and good will."

Next, the task was to find the support to provide Internet access at all of Boston's high schools within a one-year period. That's where 3Com's generosity came in, and Net Year was born. "Mayor Menino really got it," said David Katz, director of education at 3Com. The task was completed in 14 months.

In 1996, Boston's prestigious Latin School launched a technology program that highlighted the citywide efforts. Boston Latin, the nation's oldest public school, founded in 1635, received a large gift from Andrew Viterbi, an alumnus of the school and former co-founder and vice chairman of QUALCOMM. The endowment enabled Boston Latin to hire a full-time director of technology to oversee teacher training and the integration of technology into the curriculum. As a result, Boston was viewed, more than ever before, as a city intent upon leadership in educational reform -- and intent upon using 21st-century technology to achieve its goals.

Another part of the big picture came into focus with the 1998 launch of TechBoston through the support of 3Com and Cisco Systems (originally, funds were from a Technology Literacy Challenge Grant; there are now many partners, including 3Com and Cisco), which provided equipment, curriculum and training. In its first year, the program enrolled 100 students in pilot courses. "We are providing students with skill sets needed for professional certification or to move on to higher education," said Mary Skipper, TechBoston's high-powered founder.

Joel Lamousnery : A Shining Example for TechBoston

Education and technology are a powerful combination. When you add to that a healthy dose of motivation, the result can be amazing. Consider Joel Lamousnery, who came to the United States from Haiti six years ago and graduated from Dorchester High School in Boston. Joel learned about the TechBoston after-school program and signed up to earn certification as a Microsoft Certified Systems Engineer (MCSE).

MCSE is one of the most demanding and intensive professional certifications in the computer field. It requires in-depth knowledge of Microsoft products in four areas and of general networking technology in two areas. Six rigorous exams put aspiring professionals through their paces. Joel completed all six tests and received his MCSE certification in less than a year.

Joel was motivated to work hard because he has his sights set on becoming a chief information officer after college. He has a great start. His technical abilities earned him an internship as a network administrator with Boston's local phone company, Verizon Communications. He has recently started a new internship with Breakaway Solutions. The money he earns is helping to pay his way through Northeastern University, where he is a freshman majoring in management information systems.

CONTACT INFORMATION
jdl20@visto.com

The kids support technology in the schools and help teachers with networking, computer skills, Web design, robotics and database modeling. They also provide the Boston Public Library and other community-based organizations with IT support and training. With the assistance of industry professionals, TechBoston is providing a very high level of training that has allowed

some students to move directly into well-paying and responsible positions with local companies. Other students have obtained internships that allow them to learn on the job and to become familiar with industry's technological needs.

TechBoston has grown each year since the '98 pilot -- 750 students in 1999 and 1,500 students this school year -- and it will double again next year. The plan is to expand TechBoston electives into every high school and to offer robotics and Web design courses to middle-schoolers as a way of introducing them to technology early on. A further step was to expand TechBoston programs to adults in the community centers.

TechBoston is playing a key role in building the skills and foundation of expertise required to integrate technology throughout the system. It is creating a win-win situation in which industry partners support the efforts to educate future workers, and students benefit from the hands-on experience that will increase their value in the workforce.

USING TECHNOLOGY TO BUILD COMMUNITY

By 1998, 130 Boston Public Schools, 26 libraries and 100 community centers were networked, with high-speed Internet access, growing numbers of computers in the schools and a cadre of students and teachers who knew how to make technology work in the educational arena. However, fewer than one child in 10 had a computer at home, compared to a nationwide average of almost 60 percent. Ed DeMore, a former real-estate entrepreneur and member of Menino's tech team, remembers hearing the mayor say: "Until kids have a computer at home, and until their parents can use a computer at home, they don't have the power." That's when he went looking for a corporate partner with the vision and commitment to make a difference.

"We had some leverage," said DeMore. "We could point to the very significant progress that Boston had made. We could show corporate commitment through the TechBoston program. We could call attention to Boston Latin, which was a model for technology and for educational excellence in general. But the question remained, how do we find a corporate sponsor to step up and take us to the next level?"

Common sense would say that it would take a large company to make the kind of impact Boston needed, but the larger companies were skeptical. It was HiQ, a smaller and relatively unknown company, that came through. Menino received a phone call from the Sunnyvale, Calif. computer firm, and the question from CEO Echo Tsai was simple: "Would 1,000 computers donated to the city be enough to launch a project that would involve the larger community?"

The answer was yes, and Technology Goes Home was born.

Ruthella Logan-Cruz : Technology Goes Home and Goes to Work

"I needed to e-mail my paper to my professor at Bunker Hill Community College," recalled Ruthella Logan-Cruz, "and the computer at work was down. So I stopped in at the Elm Hill Family Service Center in Dorchester (a Boston neighborhood) and asked if they could help." That's when Logan-Cruz met Kate Snow, who was running the local tech center for Boston's new Technology Goes Home program. "Kate explained I could apply for computer training, and if I was accepted and passed a test at the end, I could take a computer home. It was too good to pass up."

After 10 weeks of training, Logan-Cruz took a computer home with her -- and it was a big hit. Her 12-year-old son, Francisco, does all his school papers on the computer, loves the music features available, and uses it in his photography apprenticeship. Her 3-year-old daughter can work the mouse and make the screen change. And Logan-Cruz does everything from PowerPoint presentations, to creating brochures, to organizing her case-management load for Action for Boston Community Development Head Start.

"It's made my job easier and more interesting," Logan-Cruz said, "and it's opened up new lines of family communication. There's no generation gap here," she said. "Yes, I'd certainly say Technology Goes Home changed our life."

CONTACT INFORMATION
ruthella1@hotmail.com

The plan was simple, but bold and innovative. Its key was to involve neighborhood organizations: Have local organizations be the focal point, get input from parents on what they wanted, what they thought would work. Technology Goes Home became a

collaboration in which parents, industry, local organizations and the city of Boston worked as partners -- stakeholders with mutual interests -- to provide equipment, training and support to connect homes and families to the Internet.

Tsai further offered to provide teacher training at no charge, and her generosity helped to attract corporate support from other donors. 3Com provided high-speed modems, Keane and Target Software assisted with planning and implementation, Linking Up Villages provided a Web-based network developed at the MIT Media Lab, Microsoft donated Windows and Office software, and Staples and Lexmark teamed up to provide bubble jet printers.

Two pilot programs have been completed, with families receiving 12 weeks of training. After that, they got to take home a computer, along with a modem, free Internet access and a printer. The program has been carefully monitored, refined and broadened. It's working. MIT agreed to serve as an impartial outside observer, and thus far the project is getting high marks and gaining valuable insights into ways to improve the model and make it even more effective. An additional $2.5 million dollars was raised, including a U.S. Department of Commerce grant, to expand Technology Goes Home to neighborhoods throughout Boston. More than one third of the adults in the pilot have become employed or improved their existing jobs.

MANAGING A CRITICAL MASS OF TECHNOLOGY

Today, Boston has reached a point where technology in the schools is no longer a dream. It is real, and it is pervasive. Much remains to be done, and the future is a rapidly changing landscape in which learning is a lifetime process. The question for Boston now is how to maintain the momentum, how to learn from what has been done and how to manage technology in ways that maximize the benefits to all. The answer is the Boston Digital Bridge Foundation, organized by five leaders of technology companies.

The foundation partners with community service providers, educators and families, all working together to create and manage programs that bring technology into people's everyday lives. The name of the foundation acknowledges the opportunity, going beyond the negative implications of a digital gap and focusing on the future -- a digital bridge where all can cross over into new opportunities.

THE CITY ON THE HILL

It began with an understanding that Boston had to do better by its schools, its students and its families. That understanding became the basis of a commitment to act quickly and courageously. That commitment became the underpinning of Mayor Thomas Menino's administration. He articulated a vision, enlisted the support of those who shared that vision, and set about creating the reality.

The reality is that Boston is a model of what can be done when people care enough and are willing to work hard for what they believe in. The model is complex, with businesses, schools, teachers, politicians, families and community organizations all playing key roles. What makes the model work is the fundamental understanding by all involved that there are mutual benefits to be gained. No one loses. Everyone wins.

Boston, with its world-class universities, has long been a "city on the hill" for those in search of educational excellence. Technology has begun to democratize these educational hopes and dreams more than ever before. With a new generation of citizens dedicated to the betterment of all, the city is shining more brightly than ever. As Boston pulls its diverse neighborhoods and resources together to connect people with their potential, the city on the hill with all its promise is becoming more accessible than ever before. That's what Boston's Digital Bridge is all about.

WEB SITES

Boston Public Schools
www.boston.k12.ma.us

City of Boston
www.ci.boston.ma.us

Boston Digital Bridge Foundation
www.techboston.org/daley/mdbf.htm

TechBoston
www.techboston.org

VI. CONCLUSION

Deputy City Manager Dianah Neff observed that Joint Venture Silicon Valley was formed when the region realized that it was facing a crisis and had to reinvent itself. San Diego should not wait until a crisis point is reached. It should not assume that the digital divide is a problem that will go away in a few years, not when other cities are moving aggressively to upgrade their educational systems, community development programs and public access infrastructure.

San Diego should instead capitalize on its assets and its opportunity. San Diego should connect the dots — connect the energy being generated in its dot-com, dot-org, dot-gov and dot-edu sectors. Connect the innovation and resources in the North County with the opportunity and need in the South Bay. Connect the output of schools, adult education programs and community technology centers to the input needed by employers. Connect citizens to their government, to their communities, and to each other, so that all San Diegans can sail in Bandwidth Bay under the sunny skies of Technology's Perfect Climate.

This report was prepared by the Digital Divide Working Group of the City of San Diego Science and Technology Commission.

Committee Chair
Carrie Stone
CSTONE[2]

Lead Writer
Susan Myrland
Interactive Media Management

Advisor
Jon Cohen
Venture Catalyst

With special thanks to…

Catherine Cowley
Market Research Manager
North County Times

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Bonnie Bracey
Educator
Member, National Information Infrastructure (NII) Initiative

Andy Carvin
Senior Associate
Benton Foundation
Washington, D.C.

Barbara Fillip, Ph.D
Researcher/Consultant
Arlington, VA

Dr. Kenneth L. Hacker, Ph.D.
Associate Professor
Department of Communication Studies
New Mexico State University
Las Cruces, NM

Larry Irving
Interim president, CEO, and co-founder
UrbanMagic.com

Kenan Patrick Jarboe, Ph.D.
President
Athena Alliance
Washington, D.C.

Tom Kalil
The White House
Washington, D.C.

Layton Olson
Attorney
Telecommunication Innovation & Access Network
Chicago, IL

Christine Pelosi
U.S. Department of Housing and Urban Development
Washington, D.C.

Phil Shapiro
Writer and Educational Technology Consultant
Washington, D.C.

Martin Taylor
MIRNet, University of Tennessee
Knoxville, Tennessee

William Wresch
Associate Vice Chancellor for Academic Affairs
University of Wisconsin Oshkosh

SCIENCE AND TECHNOLOGY COMMISSION

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Manager, Technology Analysis and Applications Group

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Vice President Engineering Center

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Chairman and CEO

Bill Geppert, Cox Communications, Inc.
Vice President and General Manager

Douglas E. Gray, Piracyfree, LLC
President

David Hale, President
Hale Biomedical Consulting

Craig Irving, ConfirmNet
President and CEO

Irwin Jacobs, Qualcomm Inc.
Chairman and CEO

Richard Jennings, Computer Sciences Corporation (CSC)
Vice President

Kevin Leap, North County Times (ex-officio)
Associate Publisher

Vicki Marion, JABRA
President

Susan Myrland, Interactive Media Management
Director

Dianah Neff, City of San Diego Technology Services (ex-officio)
Deputy City Manager and Chief Information Officer

David Nichols, Pacific Bell
Regional President

David Robino, Gateway, Inc.
Vice Chairman

Rear Admiral Kenneth Slaght, SPAWAR (ex-officio)
Space and Naval Warfare Systems Command

Carrie Stone, CSTONE^2
Venture Partner

Mary Walshok, University of California, San Diego (ex-officio)
Vice Chancellor

Julie Meier Wright, San Diego Regional Economic Development Corp. (ex-officio)
President and CEO

Hank Cunningham, City of San Diego
Director, Economic Development and Community Services

Benjamin Haddad, Science Applications International Corporation (SAIC)
Senior Vice President for Communications